DOCUMENT RESUME

ED 202 032 CS 206 311

AUTHOR Rosner, Mary; Paul, Terri
TITLE Using Sentence Combining in Technical Writing Classes.
PUB DATE Mar 81
NOTE 16p.: Paper presented at the Annual Meeting of the Conference on College Composition and Communication (32nd, Dallas, TX, March 26-28, 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Classroom Techniques; Higher Education; Paragraph Composition; *Sentence Combining; *Sentence Structure; *Technical Writing; *Writing Exercises; *Writing Instruction
IDENTIFIERS Audience Awareness

ABSTRACT

In spite of the growth in popularity of sentence combining over the last 20 years, few teachers use it in technical writing classes, either because the exercises are inappropriate or because teachers fear that sentence combining will teach students to write longer rather than better sentences. Sentence combining can, however, teach technical writing students basic sentence structure, sentence editing and punctuation, paragraph development and organization, and rhetorical stance. It allows students to practice choosing material appropriate for different audiences and purposes. One sentence combining exercise requires students to combine sets of sentences in imitation of a particular structure. A series of "decombining" exercises can help students see why a particular sentence is unfocused and how it can be improved. In a similar exercise for paragraphs, students choose a focus for the paragraph from a list of base sentences, select appropriate details from the list, and organize them for emphasis. In a final exercise, teachers can present a series of base sentences, then ask students to choose different kinds of details for different, previously defined audiences. After choosing the details, students adjust word choice and emphasis for each audience. The exercises show that sentence combining, with its emphasis on flexibility and choice, allows for the variations that exist in technical writing. (HTH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED202032

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Mary Rosner
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Using Sentence Combining in Technical Writing Classes

Mary Rosner and Terri Paul

Iowa State University

In Our Mutual Friend, Charles Dickens writes that "ours is a copious language, and trying to strangers" (XI). Had Dickens been able to read reports on research and practices in writing, he would have realized, along with us, that composition has its own copious language with terms that are trying even to non-strangers. "Technical style" is one of these terms.

Different scholars continue to offer us different definitions. For some, technical style is no more than the writing of one specialist to another, a writing characterized by very specific diction, tightly packed sentences, reinforcing visuals, and careful documentation. For others, technical style varies these traits significantly, according to demands of the material, audience, and purpose. For still others, technical style is entirely undistinguishable from any other prose style. As a colleague at last summer's Wyoming Conference on Freshman and Sophomore English said, "perhaps the biggest myth about style in technical writing is that there's anything unique about it--or that technical style can be distinguished from another writing by its style at all."[1]

We certainly won't attempt to offer a Key to Technical Style, though we've been working on the problem. (We are in the midst of analyzing stylistic features from publications in agriculture, home economics, and engineering.) What we will do is describe briefly what we've discovered about some traits of agronomy publications and demonstrate, in some detail,

CS 206 311

that sentence-combining can teach effective organization, audience adaptation, and conventional forms of technical writing to writers of agronomy, just as it could teach similar skills to writers in other disciplines.

In our style analysis, we examined eighteen articles--six each from popular, semi-technical, and technical journals--and classified the following features that are often characteristic of "technical style": average sentence length, sentence type, sentence openers, verb type, subordinate clauses and phrases. The analysis indicated the following:

1. The average sentence length at all three levels is twenty-one words.
2. Simple sentences dominate at all three levels; their count is highest with the most technical material.
3. The more technical the information, the more the authors rely on passive voice.
4. The more technical the information, the more the authors rely on subject openings.
5. The more technical the information, the more noun clauses are used. The precentage of relative clauses in the popular and semi-technical articles is similar (29% vs. 31%), but it is substantially reduced in the technical articles (17%).
6. Semi-technical and technical articles use a large percentage of prepositions: 10% of the word count in the semi-technical, 13% in the technical, only 6% in the popular.

Students can acquire the analytical tools needed to reproduce these syntactic structures through regular work in sentence combining. But sentence combining can do more that teach them how to imitate. With some adaptations, it

can show students how to edit and focus their writing and how to adjust material to specified audiences and purposes.

Unfortunately, in spite of sentence-combining's growth over the last twenty years, few teachers use it in technical writing classes. There are at least two reasons for this. First, teachers find that available sentence combining exercises, those found in freshman texts, are inappropriate for their advanced students. These students want to write about the fields they are experts in, not about hamburgers or the Cincinnati Reds. Second, some teachers fear that sentence combining will simply teach students to write longer (not better) sentences. Most of us agree that technical writing students don't need that kind of practice.

Our own experience with sentence combining using specialized material, however, indicates that it can be a helpful addition to the technical writing classroom. It can benefit our students generally by giving them regular writing practice. The exercises can also help in more specific ways: sentence combining can teach basic sentence structure, sentence editing, and punctuation; paragraph development and organization; and rhetorical stance: given a set of data, students can practice choosing material appropriate for different audiences and purposes.

Used regularly throughout the term, sentence-level exercises can show students at least four important things: how parts of the sentence work together, how a message can be expressed in different structures, how structure and meaning are related, and how material is often (but not always) better focused when it is put in one sentence rather than several. Our exercises are based on those found in The Writer's Options[2] but contain more specialized information. Like that text, we explain a sentence structure--

coordination, for instance--and show when it can be used and how it is punctuated. Our students then work through an exercise that requires them to combine sets of sentences in imitation of the structure:

> Combine the information in each of the following sets of sentences by using a coordinate structure.
>
> 1. The major corn endosperm mutants can be divided into three classes.
> One class consists of corn mutants now in use.
> Potentially useful corn mutants are members of a second class.
> Another class consists of corn mutants that have no known use.
>
> 2. Some potatoes are not grown commercially.
> These are the Abnaki, Bellisle, and Cascade.
> The Hudson and the Snowchip also fall into this category.

They may also be asked to evaluate how effectively a writer has used the structure:

> What items are coordinated in the following sentences. (Find the coordinating word.) Are they similar enough to deserve coordiantion?
>
> 1. The tall fescue clone, designated 80-1, had yellow-green leaf color and had been selected for resistance to Puccinia coronata and Helminthosporium spp.
>
> 2. Although a highly resistant fescue line served as maternal parent, a high percentage of C1 progenies...was susceptible to Helminthosporium spp. and, therefore, susceptible plants failed to survive the winter.

Finally, they practice the structure by creating original sentences incorporating it. With these exercises, students learn to analyze sentences carefully and to practice sentence variety, modification, and punctuation.

In spite of sentence combining's apparent emphasis on sentence length, we all know that long sentences are not necessarily good sentences. A series of decombining exercises can help students see why a particular sentence is unfocused and how it can be improved. These exercises ask them,first, to break up a sentence into smaller pieces of information and to decide which of the pieces are most important, which less important, which unimportant.

Then they choose structures appropriate to their emphasis in order to create one or more sentences that are clearer than the original:

DECOMBINING

Each of the following sentences is not as clear as it could be. Break each into smaller sentences, decide what you want to emphasize, and organize your material into one or more sentences.

1. Considering only fresh vegetable use since 1970, the most important development is that the pattern of declining use has been checked, and there has been a slight upward movement each year since 1973.

   --This generalization will concern the use of fresh vegetables since 1970.
   --The use of fresh vegetables is no longer declining.
   --The use of fresh vegetables has slightly increased each year since 1973.

Possible revision: Since 1970, the use of fresh vegetables (fresh vegetable use?) has stopped declining; in fact, since 1973, it has slightly increased each year.

As the sentence-level exercises demonstrate, sentence-combining shows a writer how to focus material to make a particular point and how to subordinate material to that point. Paragraphs function the same way. Given a list of base sentences, students can choose a focus for a paragraph, select appropriate details from the list to maintain that focus, and organize these details to edit and to emphasize. Alternatively, the teacher can assign a particular focus for the paragraph:

PARAGRAPHING

Use the details from the list below to construct a well-organized paragraph that describes how the Moduleponics system operates.

1. Moduleponics is a system based on hydroponics.
2. Hydroponics is a system that grows plants in water, not in soil.
3. Moduleponics comes in all sizes.
4. Moduleponics consists of a growing tube.
5. The growing tube is filled with plastic gravel.
6. The growing tube is 18 inches off the ground.
7. A second pipe is below the growing tube.
8. The second pipe is parallel to the growing tube.

9. The second pipe is a reservoir for the nutrient solution.
10. The second pipe is fed by an air supply line.
11. Air is pumped into the reservoir.
12. The air forces the nutrients into the growing chamber.
13. The nutrients feed the plants.

POSSIBLE PARAGRAPH:

> Moduleponics is a system based on hydroponics, which grows plants in water, not in soil. Moduleponics consists of a growing tube filled with plastic gravel. It is 18 inches off the ground. A second pipe, below it, is parallel to it. The pipe, a reservoir for the nutrient solution, is fed by an air supply line. The air is pumped into the reservoir, forcing the nutrients into the growing chamber. The nutrients feed the plants.

This type of exercise will help students learn what belongs in a paragraph and in what basic order. However, students often need help organizing material once they've decided it belongs. Using the Christensen system of analysis,[3] they can learn paragraph organization and development. As you remember, in Christensen's system, a core sentence (a level-1 sentence) comes early in the paragraph. Every other sentence is either coordinate or subordinate to the one before it. A sentence that is coordinate to the previous one presents information that functions similarly. Coordinate sentences often begin in similar ways: with the same words, synonyms, enumerative transitions. A subordinate sentence, on the other hand, presents more specific information about the previous one--an example, an effect, a definition. It should begin with a different kind of structure than the sentence it follows. The following paragraph is more effective than the earlier version because the sentence structures reinforce sentence meanings; items that are equally important are phrased similarly:

REVISED PARAGRAPH (CHRISTENSEN):

> Like hydroponics, Moduleponics is a system that grows plants in water, not is soil. This system consists of three parts. First is

a growing tube eighteen inches off the ground. It is filled with gravel. Second, parallel to and below the growing tube, is a pipe. It is a reservoir for the nutrient solution. Third is an air supply line which pumps air into the reservoir, forcing the nutrients into the growing chamber. These nutrients feed the plants.

Intro. Like hydroponics, Moduleponics....
Core 1. This system consists of three parts.
2. First is a growing tube.
3. It is filled with gravel.
2. Second, parallel to....
3. It is a reservoir....
2. Third is an air supply line...forcing nutrients....
3. These nutrients feed....

Students can learn to analyze their paragraphs this way. This system also lets them see where to develop points. For example, a paragraph having a series of only level 2 details might suggest superficiality and invite further development.

Finally, with another exercise, teachers can present a series of base sentences, then ask students to choose different kinds of details for different, already-defined audiences. After choosing those details, students should adjust word choice--as well as emphasis--for each audience:

AUDIENCE ADAPTATION

Below you will find a series of details. Study them. Then choose the details that would be appropriate for the reader of Wallace's Farmer. Translate those details into the language she will understand.

Abnaki is a round-white potato which is not widely produced commercially.
Bellisle and Snowchip are two other round-white types.
Bellisle and Snowchip are also not widely produced for the commercial market.
Nampa and Targhee are long russet types.
Nampa and Targhee are not widely produced for commercial purposes.
Butte is another russet potato.
Butte was released in 1977.
Butte has not had widespread commercial testing.
Butte's commercial market potential is not known.
Bison is a red skin variety.

Bison has performed well in several studies.
Bison might be the most promising potato for commercial use.

POSSIBLE REVISION:

Uncertain about what potato crop to plant this year? Don't grow Bellisle, Abnaki, Snowchip, Nampa or Targhee. They won't sell. Butte is chancy. It hasn't proven itself. Bison, a red skin, is your best bet.

This conscious attention to the needs of the reader is something all of our student writers have to learn.

In addition to reinforcing effective sentence and paragraph structures, sentence-combining exercises can be used to teach traditional forms of technical writing: proposals, progress reports, and sections of the technical report.

A proposal is like a letter of application: it interprets the proposer's past experience and training in terms of future work. That is, it offers a service to the reader. Students frequently have difficulty adopting a successful service attitude. In trying to be honest, they tend to concentrate on what they cannot do rather than what they can. At times, they raise such serious objections that they call into question the entire proposal. Sentence combining can give them practice in acknowledging their limitations without hopelessly undermining their proposals. It can also show them how to subordinate material so they do not insult readers by telling them what they already know.

In order to give students practice with tone and focus, we can give them base sentences like the following:

PROPOSALS

1. This is a preliminary study.
2. The results will necessarily be tentative.
3. Further tests will be required.
4. This study covers only a period of two weeks.

5. This study deals with only one kind of corn.
6. This corn is Shrunken-2.
7. Shrunken-2 has a high sugar content.
8. Shrunken-2 has low water-soluble polysaccharide (WSP) content.
9. No exact data on germination rates of Shrunken-2 exist.
10. It may have problems in poor germination.
11. These problems may occur in laboratory tests.
12. Shrunken-2 is popular among home and market growers.

They should note that the subject and the scope of a proposed study are identified as well as some important limitations to the study. They can practice combining the details in different ways, discussing the advantages and disadvantages of each of the versions offered. One possible statement, for instance, follows:

POSSIBLE REVISION:

> Shrunken-2 is popular among home and market growers. At present, no exact data on germination rates of Shrunken-2 exist. Therefore, this preliminary study will examine germination rates of Shrunken-2 over a period of two weeks in laboratory tests. Since Shrunken-2, which is high in sugar and low in water-soluble polysaccharide (WSP), may not germinate well under laboratory conditions, the results will necessarily be tentative. Further tests will be required.

The virtues of this statement can be discussed. For emphasis, the writer begins by explaining the significance and need for the study. She draws attention to this information by presenting it in short declarative sentences. Potential weaknesses in the project are played down: for instance, the fact that the data will be collected over a short period of time is presented neutrally; the possible difficulty with germination rates is subordinated; negative words like "problems in poor germination" are eliminated. Notice too that brief information about sugar and WSP content appears to remind an informed reader about the plant's physiology. Exercises like this one can offer students practice not only in subordination but also in strategies of persuasion. Through sentence combining, students can learn firsthand the various ways to minimize both familiar and negative information.

Sentence combining can give students similar experience in organizing material into a progress report. Once again, we can provide base sentences like the following:

PROGRESS REPORTS

1. This is the first progress report.
2. It covers the period from January 1 to March 15.
3. It reports on the evaluation of the effect of vestigial glume character on tassel length and on pollen production.
4. Wisconsin sweet corn inbreeds were the plants studied.
5. Twenty sets were planted.
6. Twenty sets of normal corn were also planted.
7. Tassels were bagged and sealed for pollen.
8. Pollen volume was measured.
9. Glume length was measured.
10. Pollen ranged from .65 to 15.95 ml./tassel for Vg inbreeds.
11. Pollen averaged 2.99 ml. for the Vg inbreeds.
12. Pollen averaged 20 ml. for normal corn plants.
13. Tassel glume length ranged from .65 to 5.20 ml. for Vg inbreeds.
14. Tassel glume length averaged 3.76 for the Vg inbreeds.
15. Tassel glume length averaged 11.93 for normal plants.
16. Neither the pollen volume nor glume length varied significantly in the normal plants.

The first four sentences, along with information about the authorization of the proposal, can comprise the transitional introduction to a progress report. The rest of the material, the "Work Completed," can be organized in several ways. If, for instance, students wish to emphasize the products measured, they may follow this pattern:

POSSIBLE REVISION:

Preparation: Twenty sets of Wisconsin sweet corn inbreeds were back crossed and planted; tassels were bagged and sealed for pollen. Twenty sets of normal corn were treated similarly.

Measurement:

Pollen: For Vg inbreeds, pollen ranged from .65 to 15.95 ml./tassel. It averaged 2.99 ml. For normal corn plants, pollen averaged 20 ml.

Tassel Glume Length: For Vg inbreeds, tassel glume length ranged from .65 to 5.20 ml. It averaged 3.76 ml. For normal corn plants length averaged 11.93.

If they want to emphasize how the inbreed differs from normal corn plants, they may use this variation:

POSSIBLE REVISION:

Preparation: Same

Measurement:

Vg Inbreeds	Pollen ranged from .65 ml. to 15.95 ml./tassel. It averaged 2.99 ml. Tassel glume length ranged from .65 to 5.20 ml. It averaged 3.76 ml.
Normal Corn	Very little variation. Pollen averaged 20 ml. Tassel glume length averaged 11.93 ml.

And so on. Whatever the choice, exercises like these make students directly aware of various ways to organize materials.

Frequently students have difficulty distinguishing elements of the technical report. Since the descriptive abstract, introduction, and conclusion often contain some of the same material, students tend to repeat information verbatim. Sentence-combining exercises that focus on material likely to be repeated in these sections can help students learn to tailor information for specific situations. Such exercises will also teach them to choose appropriate details for different kinds of writing and to arrange these details according to various requirements. We can furnish sentences like the following excerpts from an abstract in a technical journal:

1. The report has a purpose.
2. The purpose is to measure pH levels.
3. The levels are measured in corn seedlings.
4. The corn seedlings were grown for eleven days.
5. They were grown in two soils.
6. The soils were of pH 4.6.
7. The soils were of pH 4.3.
8. The soils were fertilized by monocalcium phosphate.
9. Rhizocylinder solutions were obtained from the soils by centrifugal filtration.
10. The solutions were analyzed for pH.

11. The solutions were analyzed for phosphate.
12. The pH level of some rhizocylinder solutions increased.
13. The increase was caused by the absorption of nitrous oxide.
14. The pH level of other rhizocylinder solutions decreased.
15. The decrease was associated with increased concentration of phosphate.
16. The decrease was also associated with phosphate uptake by corn seedlings.
17. There is a difference in absorption between corn fertilized by phosphate and that fertilized by nitrous oxide.
18. The difference can be measured by induced changes in the phosphoric acid concentration.
19. This concentration is associated with rhizocylinder pH.
20. Nitrous oxide enhanced phosphate absorption.
21. Enhanced absorption is probably a result of increased physiological capacity.
22. It is probably a result of increased root growth.

Since, aside from a statement of purpose, the descriptive abstract is little more than a list of topics covered in the report, students might combine the information as follows:

> This report measures pH levels in corn seedlings grown for eleven days in two soils of pH 4.6 and 4.3 fertilized by monocalcium phosphate. First, the report analyzes the pH and phosphate levels for rhizocylinder solutions obtained by centrifugal filtration. Next, it discusses the reasons for the differences in absorption between corn fertilized by phosphate and that fertilized by nitrous oxide.

The specific details in the last ten sentences are briefly summarized; only the general activities implied in the original sentences--measuring values, changes, and differences--are noted.

These same sentences can be recombined to form parts of the introduction. Because introductions usually contain statements of purpose, scope, and method, among other things, the sentences might read as follows:

> The purpose of this report is to measure pH levels in corn seedlings. Seedlings used for this report were grown for eleven days in two soils of pH 4.6 and 4.3 fertilized by monocalcium phosphate. To measure pH levels, we analyzed pH and phosphate in rhizocylinder solutions obtained by centrifugal filtration.

The last eleven base sentences present the specific findings of the study. They will not be included in the introduction unless, of course, students decide to offer conclusions and recommendations in the opening for an audience already familiar with the material or too busy to read the entire report.

The same information can also comprise part of the conclusion:

> This report measures pH levels in corn seedlings grown for eleven days in two soils of pH 4.6 and 4.3 fertilized with monocalcium phosphate. Rhizocylinder solutions obtained by centrifugal filtration were analyzed for pH and phosphate and revealed the following:
>
> 1. The pH level of some rhizocylinder solutions increased because of the absorption of nitrous oxide.
> 2. The pH level of other rhizocylinder solutions decreased because of increased concentration of phosphate and phosphate uptake by corn seedlings.
> 3. The difference in absorption between corn fertilized by phosphate and that fertilized by nitrous oxide can be measured by induced changes in the phosphoric acid concentration associated with rhizocylinder pH.
> 4. Nitrous oxide enhanced phosphate absorption probably as a result of increased physiological capacity and root growth.

Because conclusions summarize facts and findings, students will need to include the complete information from the last eleven base sentences and to arrange the facts in diminishing order of importance. A list works handily for this arrangement. The summary of facts will, of course, lead directly into the recommendations, where appropriate.

These exercises demonstrate that sentence combining, with its emphasis on flexibility and choice, allows for variations that exist in technical writing. By using this technique, we can teach students to explore the

choices available to them, thereby encouraging them to make the transition from undeliberative writers to composers who can communicate intended meanings to intended readers.

NOTES

[1]Jack Selzer, "Some Myths about Style in Technical Writing," Wyoming Conference on Freshman and Sophomore English, 7/80.

[2]Donald Daiker, Andrew Kerek, Max Morenberg, The Writer's Options (New York, Harper and Row, 1979).

[3]Francis Christensen and Bonniejean Christensen, A New Rhetoric (New York, Harper and Row, 1976), 142.164.